

## MANAGEMENT OF NATURAL RESOURCES FOR SUSTAINABLE DEVELOPMENT

Rashmi Tyagi<sup>1</sup>, Jatesh Kathpalia<sup>2</sup>, S. Vermani<sup>3</sup>

<sup>1</sup>Assistant Professor, College of Basic Sciences & Humanities CCS Haryana Agricultural University, Hisar

<sup>2</sup>Assistant Scientist, College of Basic Sciences & Humanities, CCS Haryana Agricultural University, Hisar

<sup>3</sup>Professor, College of Basic Sciences & Humanities, CCS Haryana Agricultural University, Hisar

**Abstract--** Ensuring adequate food and water to all and achieving sustainable development and livelihoods for current and future generations all hinge upon the responsible management of natural resources. The advancement of human activities and excessive use of natural resources has created imbalance and their use/exploitation have exceeded their natural replenishment rates. Industrialization and various other development processes have added to the problem by enhancing pollution and global temperature and today the very future of mother earth is at stake. Natural resource management specially focuses on a scientific and technically understanding of resources and ecology and the life supporting capacity of these resources. There is urgent need to shift energy burden from non renewable resources to renewable resources. A lot can be done by using biomass, biofuels, wind power, solar power and geothermal energy.

The integration of agriculture with land and water management and with ecosystem conservation is essential for both environmental sustainability and agriculture production. This review paper aims to underpin the need to manage the natural resources efficiently and to give a clear concept of the dimensions of sustainable development and strategies of how to achieve sustainable development and stress on the opportunities and challenges of sustainable development.

### INTRODUCTION

The term ‘sustainable development’ has brought into common use by the World Commission on Environment and Development in its seminal report in 1987 “Our Common Future”. The Brundtland Report has given a very comprehensive definition of sustainable development in the following words: “Sustainable Development is development that meets the needs of the present without compromising the ability of the future generations to meet their own needs.”

In June 1992, the United Nations Conference on Environment and Development (UNCED) popularly known as Earth Summit, was held at Rio De Janeiro which put the world on the path of sustainable development and adopted an action plan, popularly known as “Agenda 21”. The Agenda-21 promised to reduce poverty, provide clean water and health care and protect the natural resources and so on. It contains within it two key concepts:

- The concept of ‘needs, in particular the essential needs of the world’s poor, to which overriding priority should be given’; and
- The idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs.

Thus the goals of economic and social development must be defined in terms of sustainability in all countries – developed or developing, market oriented or centrally planned.

The satisfaction of human needs and aspirations is the major objective of development. The essential needs of vast numbers of people in developing countries for food, clothing, shelter, jobs are not being met, and beyond their basic needs, these people have legitimate aspirations for an improved quality of life. A world in which poverty and inequity are endemic will always be prone to ecological and other crises. Sustainable development requires meeting the basic needs of all and extending to all the opportunity to satisfy their aspirations for a better life.

Three mutually reinforcing pillars of sustainable development are economic growth, social development and environmental protection. Poverty eradication and changing unsustainable patterns of production and consumption are overarching objectives of sustainable development and an essential requirement for promoting environmental protection. Thus sustainability on planet Earth can be achieved only when we tackle the issues of poverty and follow the sustainable patterns of production and consumption.

Mustafa Torba opines that sustainable development encompasses help for the poor because they are left with no option than to destroy their environment. The great issues are health control, appropriate technologies, food self reliance, clean water and shelter for all. The idea of cost effective development using differing economic criteria to the traditional approach that is to say development should not degrade environmental quality nor should it reduce productivity in the long run.

Development involves a progressive transformation of economy and society. A development path that is sustainable in a physical sense could theoretically be pursued even in a rigid social and political setting. But physical sustainability cannot be secured unless development policies pay attention to such considerations as changes in access to resources and in the distribution of costs and benefits. Even the narrow notion of physical sustainability implies a concern for social equity between generations, a concern that must logically be extended to equity within each generation. More specifically, sustainable development requires the following attributes:

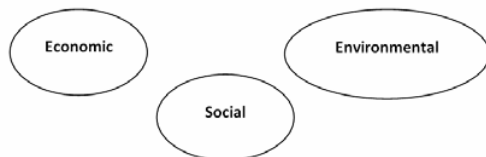
- A political system securing citizen participation in decision making;
- An economic system that is able to generate surpluses and technical knowledge on a self reliant and sustained basis.
- A social system that provides for the tensions arising from disharmonious development.
- A production system that respects the obligation to preserve the ecological base for development.
- A technological system that search continuously for new solutions.

- And an international system that fosters sustainable patterns of trade and finance, and a flexible and self-correcting administrative system.

These requirements are more in the nature of goals that should underlie national and international action on development.

#### Dimensions of Sustainable Development:

Development is not to be perceived as a permanent state or a static image, but rather as a continuing process that implies the integration of the three essential and inseparable aspects of development: the Environment, Economic and Social Dimension.



- **Environmental Sustainability:** Environmental Sustainability can be defined as the capacity to preserve over time the three basic functions of the environment: the resource supply function, the waste receiver function and that of direct usefulness. In other words, within a territory (area/region), environmental sustainability means the capacity to increase and bring up the value of the environment and its peculiarities, while assuring the protection and the renewal of natural resources and the environmental patrimony.
- **Economic Sustainability:** Economic sustainability can be defined as the capacity of an economic system to generate a constant and improving growth of its economical indicators. In particular, the capacity to generate incomes and employment in order to sustain the populations. Within a territorial system, economic sustainability means the capability, through the most efficient mix of resources, to produce and maintain the highest added value, in order to enhance the specificity of territorial products and services.
- **Social Sustainability:** Social Sustainability can be defined as the ability to guarantee welfare (security, health, education), equitably distributed among social classes and gender. Within a territory, social sustainability means the capacity of the different social actors (stakeholders), to interact efficiently, to aim towards the same goals, encouraged by the close interaction of the Institutions, at all levels.

To summarize, the concept of sustainable development is based on a political and ethical principle. This principle implies that the social and economical dynamics of modern economies are compatible both with the improvement of life conditions and the ability of natural resources to reproduce (regenerate) in an indefinite manner.

It seems therefore essential to guarantee an economical development truly compatible with social equity and ecosystems, capable to act in environmental equilibrium and to respect the so called “Three E’s balance rule”:

#### Environment, Equity and Economy.

Conclusively, the pursuit of Sustainable Development depends on the governance’s capacity to guarantee a complete interaction among economy, society and environment.

#### Sustainable Community:

Sustainable communities are:

- **Environmentally Sound:** Decision making focuses on reducing the impacts of population growth and development on natural resources and the environment.
- **Economically Productive:** Community members make local capital investments that will sustain local human and natural resources and yield adequate financial returns to those investments.
- **Socially Just:** Equitable access to resources and decision making processes foster the distribution of foods and benefits across all sectors to the community.

So, a sustainable community can persist over generations, enjoying a healthy environment, prosperous economy and vibrant civic life. It develops harmony with the ecological patterns it thrives in. It is a community where the air and water are clean water supplies fully meet demand and everyone enjoys access to locally supplied safe and healthy foods, wild life flourishes and the landscape is pleasing to the eye. Within this community, full participation and a spirit of cooperation pervade decision making. The community revitalizes the city centre, reduces sprawl and promotes regional identity and pride. A strong emphasis on education and training for all promotes an improved quality of life today and looking ahead over the next 20 years, a projected 75% of increase in the volume of world GDP (two thirds of which would come from organization for economic cooperation and development and an increase of between 1 and 2 billions in world population mainly in developing countries) compound the urgency for policy makers to take the challenge of sustainable development seriously and fosters future opportunities for the community’s youth.

A sustainable community one that:

- Acknowledges that economic, environmental and social issues are interrelated and that these issues should be addressed “holistically”.
- Recognizes the sensitive interface between the natural and built environments.
- Understands and begins to shift away from polluting and wasteful practices.
- Considers the full environmental, economic and social impacts and costs of development and community operations.
- Understands its natural, cultural, historical and human assets and resources and acts to protect and enhance them.
- Fosters multi-stakeholder collaboration and citizen participation.
- Promotes resource conservation and pollution prevention.
- Focuses on improving community health and quality of life.
- Acts to create value-added products and services in the local economy.

#### SUSTAINABLE DEVELOPMENT – OPPORTUNITIES AND CHALLENGES

##### 1. Poverty Eradication and Sustainable Livelihoods:

Poverty and a degraded environment are closely inter-related, especially where people depend for their livelihoods primarily on the natural resource base of their immediate

environment. Restoring the natural systems and improving natural resource management practices at the grassroot level are central to a strategy to eliminate poverty. Poverty magnifies the problem of hunger and malnutrition. The problem is further compounded by the inequitable access of the poor to the food that is available. It is, therefore, necessary to strengthen the public distribution system to overcome this inequity.

## **2. Need to shift burden from non-renewable resources to renewable resources:**

All the demands of developing and developed nations require the manipulation of natural resources. No economy can survive without coal, petroleum and electricity, wood and steel. Industries cannot run until they are fed these precious and stealthily depleting resources. It is in demanding times like the present that the world has become aware of how these resources are fast depleting. If these resources are not utilized efficiently, soon a day will come when our future generations will not even have drinking water, let alone all the other facilities, we take for granted.

Fossil fuels which satiate the hunger for resources in most economically progressing nations are non renewable and unsustainable. Already their production has declined and they are moving exhaustion. Although fossil fuels are being generated continuously, we are using them at the rate 100,000 faster than they are renewed.

The energy consumption of USA is approximately 11.4 Kw per person and that of Japan and Germany is 6 Kw per person while that of a country like India is a meager 0.5 Kw per person.

This calls for efficient use of non renewable resources. Wastage of such resources must be minimized and alternative sources should be made more feasible for even the common man. By shifting the energy burden from non renewable to renewable resources, we can stand up to the challenges of the future.

A lot can be done using biomass, bio-fuels, hydroelectric energy, tidal energy, fusion power, wind power, solar power and geo-thermal energy. Biomass involves using garbage and vegetable matter to produce electricity and continue for a long time to be, a major source of fuel and energy for rural poor. Recognizing this fact, appropriate mechanisms must be evolved to make such consumption of biomass sustainable through both resource management and the promotion of efficient and minimally polluting technologies. Nuclear energy is the king of all alternate sources of energy and by using nuclear fission electricity can be generated. In fact, by using 1 kg of uranium or thorium energy, equivalent to 3.5 million kg of coal can be produced. Since nuclear energy does not release any polluting gases like carbon-dioxide or sulphur dioxide, hence no acid rain or global warming. Wind energy is also being harnessed to produce electricity. India has set a goal elevating the share of new capacity addition or 10,000 Mw to come from renewables by 2012.

Solar Photovoltaic System (SPV) has found applications in households, agriculture, telecommunications, defence and railways. India receives about 300 clear days in a year which is equal to 5,000 trillion Kwh per year which is far more than the total energy consumption of the country in a year.

## **3. Changing unsustainability patterns of consumption and production:**

There is need to change unsustainability patterns of consumption and production. Several traditional practices that are sustainable and environment friendly should be encouraged rather than replaced by more modern but unsustainable practices and technologies. Development decisions regarding technology and infrastructure are a major determinant of consumption patterns. It is, therefore, important to evaluate decisions which structurally lead to a more sustainable society.

## **4. Protecting and managing the natural resource base of Economic and Social Development:**

The integration of agriculture with land and water management, and with ecosystem conservation is essential for both environmental sustainability and agriculture production. An environmental perspective must guide the evaluation of all development projects recognizing the role of natural resources in local livelihoods.

Maintenance of environmental stability through preservation and where necessary restoration of the ecological balances, conserving the natural heritage of the country, checking soil erosion and denudation in the catchment areas of rivers, lakes reservoirs will also help in stabilizing the natural resource base of economic and social development. There is need to establish well defined and enforceable rights and security of tenure and to ensure equal access to land, water and other natural and biological resources.

## **5. Sustainable development in globalizing world:**

Globalization offers opportunities and challenges for sustainable development. It is recognized that globalization and interdependence are offering new opportunities for trade, investment and capital flows and advances in technology including information technology. Globalization should be fully inclusive and equitable, and there is a strong need for policies and measures at the national and international level, formulated and implemented with the full and effective participation of developing countries and countries with economies in transition, to help them to respond effectively to challenges and opportunities. It should continue to promote open, equitable rule based, predictable and non-discriminatory multi-lateral trading and financial systems that benefit all countries in the pursuit of sustainable development. They should actively corporate responsibility and accountability, based on the Rio principles, including through the full development and effective implementation of inter-governmental agreements and measures, international initiatives and public private partnerships and appropriate national regulations.

War and armed conflict are a major threat to sustainable development.

## **6. Health and sustainable development:**

The Rio Declaration on Environment and Development states that human beings are at the centre of concerns for sustainable development and that they are entitled to a healthy and productive life, in harmony with nature. The goals of sustainable development can only be achieved in the absence of high prevalence of debilitating diseases, while obtaining health gains for the whole population requires poverty eradication. It should also promote equitable and improved access to affordable and efficient health care

services, including prevention at all levels of health system, essential and safe drugs at affordable prices, immunization services and safe vaccines and medical technology.

It also needs to promote and develop partnerships to enhance health education with the objective of achieving health literacy on a global basis by 2010, with the involvement of United Nations Agencies as appropriate. Promote the preservation, development and use of effective traditional medicine knowledge and practices, where appropriate in combination with modern medicine, recognizing indigenous and local communities as custodians of traditional knowledge and practices while promoting effective protection of traditional knowledge as appropriate, consistent with international law. It should also strengthen and promote programmes of the International Labour Organization and World Health Organization to reduce occupational deaths, injuries and illnesses and link occupational health with public health promotion as a means of promoting public health and education.

#### 7. Means of implementation:

There is urgent need for mobilizing and increasing the effective use of financial resources and achieving the national and international economic conditions needed to fulfill internationally agreed development goals, including those contained in the Millennium Declaration to eliminate poverty, improve social conditions and raise living standards and protect our environment will be our first step to ensuring that the twenty first century becomes the century of sustainable development for all.

#### 8. Trade

Trade regimes, specifically WTO, are sometimes in conflict with sustainable development priorities. Imperatives of trade and the concerns related to environment, equity and social justice, however, need to be dealt with independently.

Environmental and social clauses which are implicitly or explicitly part of international agreements must not be used selectively to erect trade barriers against developing countries.

#### 9. Strengthening goal for sustainable development at the national and international level:

##### National:

Sustainable development is achieved through optimizing gains from several variables, rather than maximizing those from a single one. This requires government departments by convention sectorally organized, to work together, or in some cases as a single multi-disciplinary authority. For this joint planning, transparency and coordination in implementation are required.

The richness of skills available in society must be harnessed through partnerships involving institutions in civil society, such as NGOs, CBOs, corporate (including private) bodies, academic and research institutions, trade unions etc. which must be made an integral part of planning and implementation for sustainable development.

##### International:

There is both a need and a scope for regional and global cooperation in sustainable development. Some of the areas of common concern are marine and riparian issues, transboundary environmental impacts, management of bioresources, technology sharing and sharing of sustainable development experiences.

Efforts must be made, especially by developing countries, to work towards synergizing experiences and raising shared regional concerns as a strong united front in international forums. Mechanisms must be put in place to facilitate such international exchange of domestic and global experiences in sustainable development.

There must be mechanisms for monitoring the compliance of countries to their obligations under various environmental agreements. Currently, there is a multiplicity of institutions with fragmented responsibilities. A better governance regime is required to ensure cooperation and compliance.

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